ANSWER 4 OF 65 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN

DUPLICATE 2

2003:287568 BIOSIS ACCESSION NUMBER: PREV200300287568 DOCUMENT NUMBER:

The synergistic activation of FLOWERING LOCUS C TITLE:

by FRIGIDA and a new flowering gene

AERIAL ROSETTE 1 underlies a novel morphology in

Arabidopsis.

Poduska, Branislava; Humphrey, Tania; Redweik, Antje; AUTHOR (S):

Grbic, Vojislava (1)

(1) Department of Plant Sciences, University of Western CORPORATE SOURCE:

Ontario, London, ON, N6A 5B7, Canada: vgrbic@uwo.ca Canada

Genetics, (April 2003, 2003) Vol. 163, No. 4, pp. SOURCE:

1457-1465. print. ISSN: 0016-6731.

Article DOCUMENT TYPE:

English LANGUAGE:

The genetic changes underlying the diversification of plant forms represent a key question in understanding plant macroevolution. To understand the mechanisms leading to novel plant morphologies we investigated the Sy-O ecotype of Arabidopsis that forms an enlarged basal rosette of leaves, develops aerial rosettes in the axils of cauline leaves, and exhibits inflorescence and floral reversion. Here we show that this heterochronic shift in reproductive development of all shoot meristems requires interaction between dominant alleles at AERIAL ROSETTE 1 (ART1), FRIGIDA (FRI), and FLOWERING LOCUS C (FLC) loci. ART1 is a new flowering gene that maps 14 cM proximal to FLC on chromosome V. ARTI activates FLC expression through a novel flowering pathway that is independent of FRI and independent of the autonomous and vernalization pathways. Synergistic activation of the floral repressor FLC by ART1 and FRI is required for delayed onset of reproductive development of all shoot meristems, leading to the Sy-O phenotype. These results demonstrate that modulation in flowering-time genes is one of the mechanisms leading to morphological novelties.

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DUPLICATE 4

2003:352090 BIOSIS ACCESSION NUMBER: PREV200300352090 DOCUMENT NUMBER:

Analysis of the molecular basis of flowering time TITLE:

variation in Arabidopsis accessions.

Gazzani, Silvia; Gendall, Anthony R.; Lister, Clare; Dean, AUTHOR (S):

Caroline (1)

(1) Department of Cell and Developmental Biology, John CORPORATE SOURCE:

Innes Centre, Colney Lane, Norwich, NR4 7UH, UK:

caroline.dean@bbsrc.ac.uk UK

Plant Physiology (Rockville), (June 2003, 2003) Vol. 132, SOURCE:

No. 2, pp. 1107-1114. print. ISSN: 0032-0889.

Article DOCUMENT TYPE: LANGUAGE:

English Allelic variation at the FRI (FRIGIDA) and FLC (FLOWERING LOCUS C) loci are major determinants of flowering time in Arabidopsis accessions. Dominant alleles of FRI confer a vernalization requirement causing plants to overwinter vegetatively. Many early flowering accessions carry loss-of-function fri alleles containing one of two deletions. However, some accessions categorized as early flowering types do not carry these deletion alleles. We have analyzed the molecular basis of earliness in five of these accessions: Cvi, Shakhdara, Wil-2, Kondara, and Kz-9. The Cvi FRI allele carries a number of nucleotide differences, one of which causes an in-frame stop codon in the first exon.

The other four accessions contain nucleotide differences that only result

in amino acid substitutions. Preliminary genetic analysis was consistent with Cvi carrying a nonfunctional FRI allele; Wil-2 carrying either a defective FRI or a dominant suppressor of FRI function; and Shakhdara, Kondara, and Kz-9 carrying a functional FRI allele with earliness being caused by allelic variation at other loci including FLC. Allelic variation at FLC was also investigated in a range of accessions. A novel nonautonomous Mutator-like transposon was found in the weak FLC allele in Landsberg erecta, positioned in the first intron, a region required for normal FLC regulation. This transposon was not present in FLC alleles of most other accessions including Shakhdara, Kondara, or Kz-9. Thus, variation in Arabidopsis flowering time has arisen through the generation of nonfunctional or weak FRI and FLC alleles.

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DUPLICATE 7

ACCESSION NUMBER: 2002:522944 BIOSIS DOCUMENT NUMBER: PREV200200522944

TITLE: DNA polymorphism at the FRIGIDA gene in

Arabidopsis thaliana: Extensive nonsynonymous variation is

consistent with local selection for flowering

time.

AUTHOR(S): Le Corre, Valerie (1); Roux, Fabrice; Reboud, Xavier

CORPORATE SOURCE: (1) Laboratoire Malherbologie et Agronomie, INRA, 21065, BP

86510, Dijon Cedex: lecorre@dijon.inra.fr France

SOURCE: Molecular Biology and Evolution, (August, 2002) Vol. 19,

No. 8, pp. 1261-1271. http://www.molbiolevol.org/. print.

ISSN: 0737-4038.

DOCUMENT TYPE: Article

LANGUAGE: English

FRIGIDA (FRI) is a major gene involved in the regulation of flowering time in Arabidopsis thaliana. Nucleotide variation at this gene was investigated by sequencing 25 field ecotypes collected from western Europe. Genetic diversity at FRI was characterized by a high number of haplotypes and an excess of low-frequency polymorphisms. A large excess of intraspecific nonsynonymous variation associated with low synonymous variation was detected along the first exon in the FRI gene. In contrast, no excess of nonsynonymous divergence was detected between A. thaliana and A. lyrata. The Tajima and McDonald and Kreitman tests, however, suggested that this gene has evolved in a nonneutral fashion. Nonsynonymous variation included eight loss-of-function mutations that have probably arisen recently and independently in several locations. A phenotypic evaluation of the sequenced ecotypes confirmed that these loss-of-function mutations were associated with an early-flowering phenotype. Taken together, our results suggest that DNA polymorphism at the FRI gene in A. thaliana from western Europe has been shaped by recent positive selection for earliness in a set of isolated populations.

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DUPLICATE 10

ACCESSION NUMBER:

2002:64184 AGRICOLA

DOCUMENT NUMBER:

IND23293348

TITLE:

Sequence variation and haplotype structure surrounding

the flowering time locus FRI in

Arabidopsis thaliana.

AUTHOR(S):

Hagenblad, J.; Nordborg, M.

AVAILABILITY:

DNAL (442.8 G28)

SOURCE:

Genetics, May 2002. Vol. 161, No. 1. p. 289-298 Publisher: Bethesda, Md.: Genetics Society of

America.

CODEN: GENTAE; ISSN: 0016-6731

NOTE:

Includes references Maryland; United States

PUB. COUNTRY: DOCUMENT TYPE:

Article

FILE SEGMENT:

U.S. Imprints not USDA, Experiment or Extension

LANGUAGE:

English

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2002:610423 BIOSIS

ACCESSION NUMBER: DOCUMENT NUMBER:

PREV200200610423

TITLE:

Direct determination of single nucleotide polymorphisms in

FRIGIDA utilizing the adenine DNA glycosylase MutY.

AUTHOR(S):

Sanda, Sherrie L. (1); Samols, Sui Bi A. (1); Holecek,

James J. (1); Post, Marc A. (1); Moffett, R. B. (1) (1) USB Corporation, Cleveland, OH: ssanda@usbweb.com USA

CORPORATE SOURCE: SOURCE:

Plant Biology (Rockville), (2002) Vol. 2002, pp. 183-184.

http://www.aspb.org/meetings/. print.

Meeting Info.: Annual Meeting of the American Society of Plant Biologists on Plant Biology Denver, CO, USA August

03-07, 2002 American Society of Plant Biologists

DOCUMENT TYPE:

Conference English

LANGUAGE:

ANSWER 25 OF 65 AGRICOLA Compiled and distributed by the National L5 Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. DUPLICATE 12 (2003) on STN

ACCESSION NUMBER:

2001:64492 AGRICOLA

DOCUMENT NUMBER:

IND23223506

TITLE:

Loss of FLOWERING LOCUS C activity

eliminates the late-flowering phenotype of FRIGIDA and autonomous pathway mutations but

not responsiveness to vernalization.

AUTHOR(S):

Michaels, S.D.; Armasino, R.M.

AVAILABILITY:

DNAL (QK725.P532)

SOURCE:

The Plant cell, Apr 2001. Vol. 13, No. 4. p. 935-941 Publisher: [Rockville, MD : American Society of Plant

Physiologists, c1989-

CODEN: PLCEEW; ISSN: 1040-4651

NOTE: PUB. COUNTRY:

Includes references Maryland; United States

DOCUMENT TYPE:

Article

FILE SEGMENT:

U.S. Imprints not USDA, Experiment or Extension

LANGUAGE: English

The MADS domain-containing transcription factor FLOWERING LOCUS C (FLC) acts as an inhibitor of flowering and is a convergence point for several pathways that regulate flowering time in Arabidopsis. In naturally occurring late-flowering ecotypes, the FRIGIDA (FRI) gene acts to increase FLC levels, whereas the autonomous floral promotion pathway and vernalization act to reduce

FLC expression. Previous work has shown that the Landsberg erecta allele of FLC, which is not a null allele, is able to partially suppress the late-flowering phenotype of FRIGIDA and mutations in the autonomous pathway. In this study, using a null allele of FLC, we show that the late-flowering phenotype of FRIGIDA and autonomous pathway mutants are eliminated in the absence of FLC activity. In addition, we have found that the downregulation of SUPPRESSOR OF OVEREXPRESSION OF CONSTANS1 by FRI and autonomous pathway

mutants also is mediated by FLC. Complete loss of FLC function, however, does not eliminate the effect of vernalization. Thus, FRI and the autonomous pathway may act solely to regulate FLC expression, whereas vernalization is able to promote flowering via FLC-dependent and

FLC-independent mechanisms.

> d 15 1-15 ti

- L5 ANSWER 1 OF 65 CAPLUS COPYRIGHT 2003 ACS on STN
- TI Plant genes involved in flower development and timing of flower formation and their use in plant breeding
- L5 ANSWER 2 OF 65 CAPLUS COPYRIGHT 2003 ACS on STN
- TI Autoregulation of FCA pre-mRNA processing controls Arabidopsis flowering time
- L5 ANSWER 3 OF 65 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN DUPLICATE 1
- TI PIE1, an ISWI family gene, is required for FLC activation and floral repression in Arabidopsis.
- L5 ANSWER 4 OF 65 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN DUPLICATE 2
- TI The synergistic activation of **FLOWERING** LOCUS C by **FRIGIDA** and a new **flowering** gene AERIAL ROSETTE 1 underlies a novel morphology in Arabidopsis.
- L5 ANSWER 5 OF 65 CABA COPYRIGHT 2003 CABI on STN DUPLICATE 3
- TI Genetics of drought adaptation in Arabidopsis thaliana: I. Pleiotropy contributes to genetic correlations among ecological traits Special issue: Genes in ecology.
- L5 ANSWER 6 OF 65 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN DUPLICATE 4
- TI Analysis of the molecular basis of **flowering** time variation in Arabidopsis accessions.
- L5 ANSWER 7 OF 65 CABA COPYRIGHT 2003 CABI on STN DUPLICATE 5
- TI AGL24 acts as a promoter of **flowering** in Arabidopsis and is positively regulated by vernalization.
- L5 ANSWER 8 OF 65 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
- TI Vernalization: The flower school.
- L5 ANSWER 9 OF 65 CAPLUS COPYRIGHT 2003 ACS on STN
- TI Floral induction gene FPA isolated from Arabidopsis thaliana and use thereof
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 DUPLICATE 6
- TI Birdsfoot trefoil flowering response to photoperiod length.
- L5 ANSWER 11 OF 65 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN DUPLICATE 7
- TI DNA polymorphism at the **FRIGIDA** gene in Arabidopsis thaliana: Extensive nonsynonymous variation is consistent with local selection for **flowering** time.
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 DUPLICATE 8
- TI Bay-0 x Shahdara recombinant inbred line population: a powerful tool for the genetic dissection of complex traits in Arabidopsis.
- L5 ANSWER 13 OF 65 CABA COPYRIGHT 2003 CABI on STN DUPLICATE 9
- TI The VERNALIZATION INDEPENDENCE 4 gene encodes a novel regulator of FLOWERING LOCUS C.

- L5 ANSWER 14 OF 65 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
- TI Activation of FLC by ART1, ART2 and FRI is required for the altered body plan of the Sy-O ecotype of Arabidopsis.
- L5 ANSWER 15 OF 65 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
- TI Analysis of Limburg, an Arabidopsis late-flowering aerial rosette-bearing ecotype.
- => d 16-30 ti
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 (2003) on STN DUPLICATE 10
- TI Sequence variation and haplotype structure surrounding the flowering time locus FRI in Arabidopsis thaliana.
- L5 ANSWER 17 OF 65 CABA COPYRIGHT 2003 CABI on STN DUPLICATE 11
- TI Effects of simulated grazing on growth and persistence of Artemisia frigida in a semiarid sandy rangeland.
- L5 ANSWER 18 OF 65 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
- TI Genetics of drought adaptation in Arabidopsis thaliana: Natural variation, QTL mapping, near-isogenic lines and transformants.
- L5 ANSWER 19 OF 65 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
- TI Direct determination of single nucleotide polymorphisms in **FRIGIDA** utilizing the adenine DNA glycosylase MutY.
- L5 ANSWER 20 OF 65 CAPLUS COPYRIGHT 2003 ACS on STN
- TI Epigenetics: The flowers that come in from the cold
- L5 ANSWER 21 OF 65 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
- TI The VERNALIZATION INDEPENDENCE4 gene encodes a novel regulator of FLOWERING LOCUS C.
- L5 ANSWER 22 OF 65 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
- TI Function and regulation of the vernalization-responsive gene EARLI1.
- L5 ANSWER 23 OF 65 CABA COPYRIGHT 2003 CABI on STN
- TI Effect of grazing on reproduction in Potentilla acaulis population.
- ANSWER 24 OF 65 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003) on STN
- TI The vernalization response of Arabidopsis.
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 DUPLICATE 12
- TI Loss of **FLOWERING** LOCUS C activity eliminates the lateflowering phenotype of **FRIGIDA** and autonomous pathway mutations but not responsiveness to vernalization.
- L5 ANSWER 26 OF 65 CABA COPYRIGHT 2003 CABI on STN DUPLICATE 13
- TI RNA levels and activity of **FLOWERING** LOCUS C are modified in mixed genetic backgrounds of Arabidopsis thaliana.
- L5 ANSWER 27 OF 65 CAPLUS COPYRIGHT 2003 ACS on STN
- TI Protein and DNA sequences of a novel Arsbidopsis gene VRN2 from

FRIGIDA (FRI) locus and the uses thereof in controling plant flowering time

- L5 ANSWER 28 OF 65 CABA COPYRIGHT 2003 CABI ON STN DUPLICATE 14
- TI The AGAMOUS-LIKE 20 MADS domain protein integrates floral inductive pathways in Arabidopsis.
- ANSWER 29 OF 65 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.

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 DUPLICATE 15
- TI Molecular analysis of **FRIGIDA**, a major determinant of natural variation in Arabidopsis **flowering** time.
- L5 ANSWER 30 OF 65 CAPLUS COPYRIGHT 2003 ACS on STN
- TI Molecular analysis of **flowering** time and vernalization response in Arabidopsis, a minireview

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 DUPLICATE 16
- TI FLOWERING LOCUS C encodes a novel MADS domain protein that acts as a repressor of flowering.
- L5 ANSWER 32 OF 65 CABA COPYRIGHT 2003 CABI on STN DUPLICATE 17
- TI Genetic analysis of **flowering** time for eight natural populations of Arabidopsis thaliana (Brassicaceae) in Japan with special regard to the genes, **FRI** and FLC.
- L5 ANSWER 33 OF 65 CABA COPYRIGHT 2003 CABI on STN DUPLICATE 18
- TI Methylation controls the low temperature induction of **flowering** in Arabidopsis.
- L5 ANSWER 34 OF 65 CABA COPYRIGHT 2003 CABI on STN DUPLICATE 19
- TI Comparison of **flowering** time genes in Brassica rapa, B. napus and Arabidopsis thaliana.
- L5 ANSWER 35 OF 65 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
- TI Plant development: Timing when to flower.
- L5 ANSWER 36 OF 65 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.

 (2003) on STN DUPLICATE 20
- TI Seed production, seed rain, and the seedbank of fringed sagebrush.
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 (2003) on STN

 DUPLICATE 21
- TI Analysis of flowering time in ecotypes of Arabidopsis thaliana.
- L5 ANSWER 38 OF 65 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
- Dissertationes Botanicae, Vol. 271 Comparison of cushion plant vegetation in high mountain areas of central and northern Europe with regard to **flowering** ecology.
- L5 ANSWER 39 OF 65 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN DUPLICATE 22
- TI An altered body plan is conferred on Arabidopsis plants carrying dominant alleles of two genes.
- L5 ANSWER 40 OF 65 CAPLUS COPYRIGHT 2003 ACS on STN
- TI Analysis of the molecular basis of vernalization in Arabidopsis thaliana
- L5 ANSWER 41 OF 65 CAPLUS COPYRIGHT 2003 ACS on STN
- TI Molecular genetic analysis of flowering time in Arabidopsis
- L5 ANSWER 42 OF 65 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.

 (2003) on STN DUPLICATE 23
- TI Interaction of FLC and late-**flowering** mutations in Arabidopsis thaliana.
- L5 ANSWER 43 OF 65 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
- TI Map-based cloning of the Arabidopsis thaliana **flowering** time locus **FRI**.
- L5 ANSWER 44 OF 65 CABA COPYRIGHT 2003 CABI on STN
- TI [Covering materials to control plant growth by modifying the spectral

balance of daylight].
Materiaux de couverture controlant la croissance des vegetaux par modification de l'equilibre spectral de la lumiere du jour.

- ANSWER 45 OF 65 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.

 (2003) on STN

 DUPLICATE 24
- TI QTL analysis of flowering time in Arabidopsis thaliana.

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FILE 'AGRICOLA, CABA, BIOSIS, CAPLUS' ENTERED AT 16:25:43 ON 19 AUG 2003
L1 881 S FRI
L2 133205 S FLOWERING
L3 1895 S (FRIGIDA OR FRI)
L4 127 S L3 AND L2
L5 65 DUP REM L4 (62 DUPLICATES REMOVED)

WEST

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END OF SEARCH HISTORY